

Consortium for Petroleum & Natural Gas Stripper Wells

Technical Quarterly Progress Report for
August 1, 2006 – October 31, 2006

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ABSTRACT

The Pennsylvania State University, under contract to the U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL) established a national industry-driven Stripper Well Consortium (SWC) that is focused on improving the production performance of domestic petroleum and/or natural gas stripper wells. The consortium creates a partnership with the U.S. petroleum and natural gas producers, trade associations, state funding agencies, academia, and the National Energy Technology Laboratory.

This report serves as the tenth quarterly technical progress report for the SWC. Key activities for this reporting period include:

- 2004 SWC Final Project Reports distribution;
- Exhibit and present at the Midcontinent Oil and Gas Prospect Fair, Great Bend, KS, September 12, 2006;
- Participate and showcase current and past projects at the 2006 Oklahoma Oil and Gas Trade Expo, Oklahoma City, OK, October 26, 2006;
- Finalize agenda and identify exhibitors for the northeastern US, Fall SWC Technical Transfer Workshop, Pittsburgh, PA, November 9, 2006;
- Continue distribution of the public broadcast documentary, “Independent Oil: Rediscovering American’s Forgotten Wells”;
- Communications/outreach; and
- New members update.

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INTRODUCTION

The Pennsylvania State University, under contract to the U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), established an industry-driven stripper well consortium that is focused on improving the production performance of domestic petroleum and/or natural gas stripper wells. Industry-driven consortia provide a cost-efficient vehicle for developing, transferring, and deploying new technologies into the private sector. The Stripper Well Consortium (SWC) creates a partnership with the U.S. petroleum and natural gas industries and trade associations, state funding agencies, academia, the National Energy Technology Laboratory, and the National Petroleum Technology Office.

Consortium technology development research is conducted in the areas of reservoir remediation, wellbore clean up, and surface system optimization. Projects are funded on an annual basis. Consortium members elect an Executive Council that is charged with reviewing projects for consortium co-funding. Proposals must address improving the production performance of stripper wells and must provide significant cost share. The process of having industry develop, review, and select projects for funding ensures that the consortium conducts research that is relevant and timely to industry. Co-funding of projects using external sources of funding is sought to ensure that consortium funds are highly leveraged.

EXECUTIVE SUMMARY

This report is a summary of the important accomplishments during the period of August 1, 2006 to October 31, 2006. This is the tenth quarterly report since the inception of the SWC on September 30, 2000. The SWC was established under contract to the Pennsylvania State University from the U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL). The agreement provides Penn State the overarching management responsibilities for the consortium.

Key activities for this reporting period includes:

Technical Reporting

The distribution of the 2004 SWC Final Project Reports to all 2004 Full Members. Eight final project reports were distributed via a project report notebook and an electronic version on a compact disc (CD).

Technology Transfer Meetings

The SWC was a silver sponsor at the Midcontinent Oil and Gas Prospect Fair, Great Bend, KS on September 12, 2006. The SWC participated as an exhibitor and gave a special presentation on the benefits of the SWC. This was the first event in this area in many years and was deemed very successful by the show organizers;

As part of technology transfer for the southwestern US, the SWC participated as a platinum sponsor in the 2006 Oklahoma Oil and Gas Trade Expo, Oklahoma City, OK on October 26, 2006. The SWC identified eight projects to showcase their technological findings at the Expo;

Finalize agenda and identify exhibitors for the northeastern US Fall SWC Technical Transfer Workshop, Pittsburgh, PA on November 9, 2006. In addition to technical presentations, the meeting will feature a workforce issues panel, a roundtable discussion from the new 2006 projects, and a road to commercialization panel featuring special speakers on issues to consider in creating a business plan, patent considerations, and project participants on various issues encountered in their efforts to move technology to commercialization.

Communications/Outreach

Continue distribution of the public broadcast documentary video, "Independent Oil: Rediscovering American's Forgotten Wells". During this quarter over 1350 videos were distributed;

Notice of the upcoming SWC meetings appeared in the PTTC Network News, Volume 12, No. 4 and the PTTC Tech Alert e-news, November 2, 2006; a technical report on the "Application of Microseismic Imaging to Improve Shallow Hydraulic Fractures" appeared in the GasTIPS magazine; notice of the SWC sponsorship and exhibitors for the 2006 OK Oil and Gas Trade Expo appeared in the Oklahoma Stripper, June 2006.

Membership

Membership growth continues. The SWC membership now includes 64 full, supporting, endorsing and affiliate members.

EXPERIMENTAL

A description of experimental methods is required by the DOE for all quarterly technical progress reports. In this program, Penn State is responsible for establishing and managing an industry-driven stripper well consortium. Technology development research awards are made on a competitive basis. Therefore, this section is not applicable

to the Penn State contracted activities. Technical reports from the individual researchers are required to contain an experimental discussion section and are submitted to consortium members and DOE for their review.

RESULTS AND DISCUSSION

This report addresses the activities for the reporting period from August 1, 2006 through October 31, 2006. During this time period efforts were directed toward the following activities:

- Distribute the 2004 SWC Final Project Reports to all 2004 Full Members;
- Exhibit and present at the Midcontinent Oil and Gas Expo and Prospect Fair, Great Bend, KS on September 12, 2006;
- Participate and showcase current and past projects at the 2006 Oklahoma Oil and Gas Trade Expo, Oklahoma City, OK on October 26, 2006;
- Identify projects and finalize the agenda for the Fall SWC Technology Transfer Workshop in Pittsburgh, PA on November 9, 2006. Identify projects to exhibit during the SWC/GSTC joint reception;
- Continue distribution of the public broadcast documentary video, “Independent Oil: Rediscovering American’s Forgotten Wells”;
- Communications/outreach; and
- New members update.

2004 SWC Final Project Reports Distribution

A paper copy and an electronic version on a compact disc (CD) of the 2004 Final Projects Reports were distributed to all 2004 Full Members. The reports are for projects that were selected at the May 2004 meeting. Ten (10) projects were initially identified for funding, however, one project was not completed nor were any funds expended and one report was not received by the distribution date. The reports are:

Artificial Lift

- A New Look at Foam for Unloading Gas Wells - *Colorado School of Mines*

- Low Friction Production Tubing for Gas Well De-Liquification - *Dyna Coil (no report, no funds expended)*
- Plunger Lift Process Optimization Using a Surface System for Plunger Generated Acoustic Noise Detection and Digital Signal Processing for Wellbore Plunger Location Monitoring - *Tubel Technologies*
- Field Testing for the Vortex DXR Retrievable Insert Tool in Conjunction with Other Lifting Methods - *Vortex Flow, LLC*

Reservoir Remediation/Optimization

- Advance Technology for Infill and Recompletion Candidate Well Selection - *Texas A&M*
- Resolving Discrepancies in Predicting Critical Rate in Low-Pressure Gas Stripper Wells - *Texas Tech (report not received by distribution date)*
- Hydraulic Fracture Imaging - *Universal Well Service*

Enhanced Recovery

- PVT Study of the Interaction of Nitrogen and Crude Oil, Stage II, - *The Pennsylvania State University*

Surface Optimization

- Design, Construction and Evaluation of an Accurate, Low-Cost Portable Production Well Tester - *Oak Resources*
- Building and Testing a New Type of Compressor for Stripper Well Production Application - *W&W Vacuum and Compressors, Inc.*

Midcontinent Oil & Gas Expo and Prospect Fair

The SWC participated as a gold sponsor at the Midcontinent Oil & Gas Expo and Prospect Fair at the Highland Hotel and Convention Center in Great Bend, Kansas on September 12, 2006. The event was organized by the North Midcontinent region of the Petroleum Technology Transfer Council (PTTC) and the Kansas University Center for Research to bring together operators and service companies to promote and enhance the transfer of technology, as well as providing a venue for operators to show prospects to potential investors. This was the first year for the expo and the first in many years in this area. The one-day expo featured 64 exhibits and an attendance of over 300. Ms. Sharon L. Elder represented the SWC during the exhibit session and was a special speaker with a presentation titled, "The Stripper Well Consortium, A Cost-Effective Vehicle for Developing New Technologies".

2006 Oklahoma Oil and Gas Trade Expo

The Fall SWC Technology Transfer Meeting for the southwestern regions of the US was held as part of the 2006 Oklahoma Oil & Gas Trade Expo, Oklahoma City, OK on October 26, 2006. The SWC participated as a platinum sponsor at the Expo organized by the Oklahoma Marginal Well Commission. Eight SWC projects featured their technology findings, as well as an exhibit by the Stripper Well Consortium. Expo participants were:

- BEDCO, Inc.
- Cook Contracting Services, LLC.
- Hydroslotter Corp.
- Impact Technologies, LLC.
- University of Kansas
- PAAL, LLC.
- Schlumberger Consulting Services, and
- Stripper Well Consortium

The registered attendance for this year's Expo was 1715, with 261 booths and 193 companies. This represents a significant increase from years past, which have historically drawn an attendance of over 1,400. Notification of the SWC sponsorship and exhibitors appeared in the Oklahoma Stripper, "2006 Trade Expo Sponsors & Exhibitors to Date", June 2006, Vol. 11.2, pg. 9.

SWC Technology Transfer Workshop

The Fall SWC Technology Transfer Workshop for the northeastern region of the US will be held at the Embassy Suites Pittsburgh International Airport Hotel, Pittsburgh, PA on November 9, 2006. The meeting will be in conjunction with the Gas Storage Technology Consortium (GSTC) Technology Transfer Meeting. The GSTC meeting will be held on November 8, 2006. A SWC/GSTC joint reception, exhibit, and poster session will be held on November 8, 2006, following the close of the formal GSTC meeting. Ten SWC and GSTC projects will showcase technology during the exhibit session. The SWC Technology Transfer Workshop will follow on November 9, 2006. The meeting will feature a workforce and education panel, a roundtable discussion for the new 2006 projects, and a success panel - moving technology to commercialization - highlighting societal benefits and economic impact of several past and currently funded SWC

projects. The scheduling of back-to-back meetings will fit with the plans to strengthen the interactions between SWC and GSTC.

“Independent Oil” Distribution

Interest in the public broadcast documentary video, “Independent Oil: Rediscovering American’s Forgotten Wells” continues. In this quarter, 1351 DVD’s were distributed. The SWC entered the video in the 2006 IOGCC Chairman’s Environmental Stewardship Award competition in the energy education category and received an honorable mention.

Communications/Outreach

The SWC continues to promote the consortium using many different venues including electronic news, magazine articles, sponsorship of technical sessions, distribution of public broadcasting documentary videos, promotional packets, telephone follow-up to inquiries, presentations, and participation in trade shows and expos.

Notice of the two - Fall Technology Transfer Meetings appeared in the PTTC Network News, Vol. 12, No. 4, 4th Quarter 2006, page 11. Notice of the northeast SWC Tech Transfer Workshop appeared in the PTTC Tech Alert e-news on November 2, 2006 <http://www.pttc.org/news_press.htm>. This news release also featured a short article on the previously funded VortexFlow SX tool titled, “DOE, Industry Consortium Project Deploys New Stripper Well Tool”.

The SWC funded project that combined a series of technical disciplines to improve stimulation effectiveness in shallow Devonian age reservoirs in western Pennsylvania appeared in GasTIPS. Willis, R., Paugh, L., and Griffin, L., “Application of Microseismic Imaging to Improve Shallow Hydraulic Fractures”, GasTIPS, Volume 12, Number 3, pgs. 9-12, Gas Technology Institute, Chicago, IL, 2006.

The SWC website continues to be updated (<http://www.energy.psu.edu/swc>). A second electronic newsletter, the SWC Insider, has been drafted for distribution. This online SWC newsletter will be sent to the SWC listserv and posted to the SWC website.

New Members

The SWC membership continues to grow and broaden in diversity. During this quarter the following was added:

- RTA Systems, Bartlesville, OK

The membership for 2006 now includes 49 full, 9 supporting, 1 endorsing, and 5 affiliates for a total of 64 members. Recruiting additional members throughout 2006 will continue.

Planned Activities for the Next Reporting Period

During the next quarter the SWC will:

- Host the Fall SWC Technology Transfer Workshop for the northeastern US in Pittsburgh, PA on November 9, 2006;
- Invoice SWC membership for 2007;
- Solicit nominations for (4) Executive Council seats;
- Draft and release the request for proposals (RFP) for 2007;
- Continue member recruitment;
- Release another online newsletter, the SWC Insider; and
- Continue to update and improve the SWC web site.

CONCLUSIONS

During this reporting period, the SWC distributed a 2004 SWC Project Final Report notebook and CD to all 2004 Full Members. The SWC participated and gave a special presentation at the Midcontinent Oil and Gas Trade Expo, Great Bend, KS. The SWC held a southwestern US regional technology transfer meeting as part of the 2006 OK Oil and Gas Expo, Oklahoma City, OK. The SWC completed the final agenda for the northeastern US regional Fall SWC Technology Transfer Workshop, Pittsburgh, PA. The membership in the SWC is at an all time high and now includes 64 members. The SWC has laid a solid foundation for continued membership growth and industrial-relevant technology transfer.

REFERENCES

A listing of referenced materials is required by the DOE for each quarterly technical progress report. This technical progress report for the SWC did not utilize any reference material.